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STATE OF MINNESOTA

Office Memorandum

DEPARTMENT Health

TO : Rick Ferguson, Hydrologist
Minnesota Pollution Control Agency
Division of Solid and Hazardous Waste

DATE: December 28, 1981

FROM : Mike Convery, Hydrologist
Division of Environmental Health

PHONE:

SUBJECT: Review of K. W. Brown and Associates, Inc., report "Potential Pathways of Human Exposure to Polynuclear Aromatic Hydrocarbons at the Abandoned Reilly Chemical and Tar Site" (November 1981)

We have reviewed a copy of the above report received by us on December 4, 1981, and would like to provide the following comments for your consideration. The report does correctly outline the 3 major pathways of human ingestion of Polynuclear Aromatic Hydrocarbons (PAH's). The conclusion that direct volatilization of PAH's is not a major problem is probably correct and most of the atmospheric PAH that is measured is probably associated with particulates. We agree with the need for some air sampling to determine both background and on-site levels although it may be difficult to select a background location (unless you simply mean upwind of the site).

The discussion of total PAH exposure for children (page 5) is confusing. Table 3 appears to indicate that normal ingestion of a PAH contaminated soil (2600 ug/gr) by an average child (132 ug/day) is 2 orders higher than normal daily PAH intake through water, air, and food, and that ingestion by a child with pica (5200 ug/day) would exceed the normal daily intake by another 1-2 orders of magnitude. Therefore, the levels through soil ingestion exceed ingestion through water, food, and air by 3-4 orders of magnitude for a child with pica. Yet, the text of the discussion indicates that these increases are not of health concern and correspond to a risk probability of less than 10^{-5}. The 0.027 ug/day from water alone would, in itself, correspond to a 10^{-5} risk according to the Ambient Water Quality Criteria for PAH's (Federal Register Notice - Vol. 45, #231, p. 79339 - November 28, 1980). This obviously does not appear to be consistent.

The report does not deal with compounds other than PAH's particularly benzene and naphthalene. During the inspection of the excavations on Block 1, soils that would be considered clean on a visual basis still had a very strong odor. The compounds responsible for this odor probably include benzene and naphthalene. We would have to await the results of analyses of soil samples collected by you to confirm this suspicion. Although, PAH's probably do not represent a problem in terms of volatilization there are clearly other compounds that are producing strong odors on the site. This differs with the conclusion that vapor buildup in buildings is slight.

Within Block 1, there are two fairly continuous layers of oily and tarry material at depths of 1 and 2 feet. We would strongly recommend that these layers be removed rather than covered by a foot of clean fill. Also, there are pockets of tarry material that have bubbled to the surface and these should also be removed.

If you have any questions, please feel free to contact me at 296-5297.

cc: Stephen Shakman, M.P.C.A., A.G.
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